Listing of Claims

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Previously Presented) A capacitor comprising:

a buffer structure of an insulating material formed over a substrate;

a lower electrode formed over the buffer structure;

a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

an upper electrode formed on the capacitor dielectric film,

the buffer structure having a height larger than a width thereof so as to suppress a stress applied to the capacitor dielectric film caused by a thermal expansion coefficient difference between the substrate and the capacitor dielectric film.

2. (Original) A capacitor according to claim 1, wherein a thermal expansion coefficient of the capacitor dielectric film is larger than that of the substrate.

3-4. (Canceled)

5. (Original) A capacitor according to claim 1, wherein the capacitor dielectric film has (001) oriented tetragonal crystal structure.

6. (Original) A capacitor according to claim 5, wherein the lower electrode has (100) oriented cubic crystal structure.

7-8. (Canceled)

9. (Original) A capacitor according to claim 1, wherein the capacitor dielectric film has (111) oriented rhombohedral crystal structure.

10. (Original) A capacitor according to claim 9, wherein the lower electrode has (111) oriented cubic crystal structure.

11-12. (Canceled)

13. (Previously Presented) A semiconductor device comprising:

a memory cell transistor formed on a semiconductor substrate, and including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

an insulation film covering the semiconductor substrate with the memory cell transistor formed on;

a buffer structure of an insulating material formed on the insulation film; and

a capacitor formed over the buffer structure, and including a lower electrode electrically connected to one of the source/drain diffused layers; a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a smaller thermal

expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and an upper electrode formed on the capacitor dielectric film,

the buffer structure having a height larger than a width thereof so as to suppress a stress applied to the capacitor dielectric film caused by a thermal expansion coefficient difference between the substrate and the capacitor dielectric film.

14. (Currently Amended) A semiconductor device comprising:

a memory cell transistor formed on a semiconductor substrate and including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

an insulation film covering the semiconductor substrate with the memory cell transistor formed on;

a contact plug buried in the insulation film and electrically connected to one of the source/drain diffused layers;

a barrier metal layer formed on the contact plug and the insulation film; and

a capacitor formed over the insulation film, and including a lower electrode formed on the barrier metal layer and having a width larger than that of the barrier metal layer;

a capacitor dielectric film formed on the lower electrode, and formed of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the semiconductor substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

an upper electrode formed on the capacitor dielectric film,

the lower electrode having a height larger than a width thereof and being not in contact with the insulation film so as to suppress a stress applied to the capacitor dielectric film caused by a thermal expansion coefficient difference between the substrate and the capacitor dielectric film.

15. (Withdrawn) A method for fabricating a capacitor comprising the steps of:

forming a buffer structure on a substrate:

forming a lower electrode on the buffer structure;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

16. (Withdrawn) A method for fabricating a capacitor according to claim 15, wherein

in the step of forming the buffer structure, a configuration of the buffer structure is set so that a tensile stress due to a thermal expansion coefficient difference between the substrate and the capacitor dielectric film is not applied to the capacitor dielectric film in the step of forming the capacitor dielectric film.

17. (Withdrawn) A method for fabricating a capacitor comprising the steps of:

forming a lower electrode on a substrate;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

18. (Withdrawn) A method for fabricating a capacitor according to claim 17, wherein

in the step of forming the lower electrode, a configuration of the lower electrode is set so that a tensile stress due to a thermal expansion coefficient difference between the substrate and the capacitor dielectric film is not applied to the capacitor dielectric film in the step of forming the capacitor dielectric film.

19. (Withdrawn) A method for fabricating a capacitor according to claim 15, wherein

in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (001) oriented tetragonal crystal structure.

20. (Withdrawn) A method for fabricating a capacitor according to claim 19, wherein

in the step of forming the lower electrode, the lower electrode is formed to have (100) oriented cubic crystal structure.

21. (Withdrawn) A method for fabricating a capacitor according to claim 17, wherein in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (001) oriented tetragonal crystal structure.

22. (Withdrawn) A method for fabricating a capacitor according to claim 21, wherein in the step of forming the lower electrode, the lower electrode is formed to have (100) oriented cubic crystal structure.

23. (Withdrawn) A method for fabricating a capacitor according to claim 15, wherein in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (111) oriented rhombohedral crystal structure.

24. (Withdrawn) A method for fabricating a capacitor according to claim 23, wherein in the step of forming the lower electrode, the lower electrode is formed to have (111) oriented cubic crystal structure.

25. (Withdrawn) A method for fabricating a capacitor according to claim 17, wherein in the step of forming the capacitor dielectric film, the capacitor dielectric film is formed to have (111) oriented rhombohedral crystal structure.

26. (Withdrawn) A method for fabricating a capacitor according to claim 25, wherein in the step of forming the lower electrode, the lower electrode is formed to have (111) oriented cubic crystal structure.

27. (Withdrawn) A method for fabricating a semiconductor device comprising the steps of:

forming on a semiconductor substrate a memory cell transistor including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

forming an insulation film on the semiconductor substrate with the memory cell transistor formed on;

forming a buffer structure on the insulation film;

forming on the buffer structure a lower electrode electrically connected to one of the source/drain diffused layers;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a smaller thermal expansion coefficient than that of the buffer structure and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

28. (Withdrawn) A method for fabricating a semiconductor device comprising the steps of:

forming on a semiconductor substrate a memory cell transistor including a gate electrode, and source/drain diffused layers formed in the semiconductor substrate respectively on both sides of the gate electrode;

forming an insulation film on the semiconductor substrate with the memory cell transistor formed on;

forming on the insulation film a lower electrode electrically connected to one of the source/drain diffused layers;

forming on the lower electrode a capacitor dielectric film of a perovskite ferroelectric material having a larger thermal expansion coefficient than that of the semiconductor substrate and having a crystal oriented substantially perpendicular to a surface of the lower electrode; and

forming an upper electrode on the capacitor dielectric film.

29. (Canceled)

30. (Previously Presented) A capacitor according to claim 1, wherein the capacitor dielectric film is formed by CVD method.

31. (Previously Presented) A capacitor according to claim 2, wherein the capacitor dielectric film is formed by CVD method.

32. (Canceled)